CITY OF ALBUQUERQUE

Hydrology Section Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

May 16, 2018

David Thompson PE
Thompson Engineering Consultants Inc.
PO Box 65760
Albuquerque, NM 87193

RE: **Signal Village Subdivision**
Drainage Report
Engineer's Stamp Date 5/10/2018
Hydrology File: C20D078

Dear Mr. Thompson:
Based on the information provided in the submittal received on 5/11/2018 the above-referenced Drainage Report failed to address any of the comments in the May 7th comment letter on the Grading Plan so neither can be approved for Preliminary Plat until all of the May 7th comments and the following additional comments are addressed:

1. Supercritical flows are shown at nearly every cross section in the HEC-RAS model. Irregularities in natural arroyos generally prevent sustained supercritical flow so the model must be changed to subcritical only.
2. The model shows that the proposed fill in the floodplain will cause increased water surface elevations on neighboring properties. This may be allowed if the neighboring properties provide written permission for the specific maximum increase in Base Flood Elevation and Floodplain width associated with this project.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Orig: Drainage File

3. It is unclear what condition has been modeled on the lot at 9000 Alameda Blvd. where the owner has placed obstructions in the arroyo and is currently working on a plan to resolve violations of the Flood Hazard and Drainage Control ordinance and Section 404 of the Clean Water Act. The report must specifically address what assumptions that are being used in the model of the Signal Village Subdivision. It is possible that cooperation between the two projects may yield a mutually beneficial solution, but that solution must address both the floodplain and the 404 issues. A joint project will have to include restoration of an unobstructed sand bottom channel that preserves sediment continuity through the project area. A joint project will also have to include Agreement and Covenants and a Public Drainage Easements for the floodplain and the scour protection on all developed lots. Permission for increased BFEs will be required from all affected properties including any not being developed at this time.

If you have any questions, I can be contacted at 924-3986 or jhughes@cabq.gov.

Sincerely,

James D. Hughes P.E.
Principal Engineer, Planning Dept.
Development Review Services

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: SIGNAL VILLAGE SUBDIVISION Building Permit #: _____ City Drainage #: C-20

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOTS 17 & 18, BLOCK 4, TRACT 3, UNIT 3, NORTH ALBUQUERQUE ACRES

City Address: _____

Engineering Firm: Thompson Engineering Consultants, Inc Contact: David Thompson

Address: P.O. Box 65760 Albuquerque, NM 87122

Phone#: 505-271-2199 Fax#: N/A E-mail: Jeremy.shell@respec.com

Owner: Llave Enterprises, Inc. Contact: Bob Keeran

Address: 8830 Keeran Lane NE Albuquerque, NM 87122

Phone#: 505-249-1502 Fax#: _____ E-mail: _____

Architect: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

_____ GRADING PLAN

_____ DRAINAGE MASTER PLAN

X DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

_____ BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY

X PRELIMINARY PLAT APPROVAL

_____ SITE PLAN FOR SUB'D APPROVAL

_____ SITE PLAN FOR BLDG. PERMIT APPROVAL

_____ FINAL PLAT APPROVAL

_____ SIA/ RELEASE OF FINANCIAL GUARANTEE

_____ FOUNDATION PERMIT APPROVAL

_____ GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

_____ PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: X Yes _____ No

DATE SUBMITTED: 5/11/2018 By: Nirit Finkelshtin

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

THOMPSON Engineering Consultants, Inc.

May 10, 2018

Mr. Doug Hughes
Principal Engineer, Planning Dept.
Development Review Services
600 2nd Street NW
Albuquerque, NM 87102

Re: La Cueva Arroyo – Floodplain Work Map

Dear Mr. Hughes:

Thompson Engineering Consultants (TEC) and RESPEC have performed a hydraulic analysis of the La Cueva Arroyo located south of Alameda Boulevard and north of Signal Avenue running east from the AMAFCA concrete channel to Ventura Street.

The La Cueva Arroyo flows from east to west, in the North Albuquerque Acres Area. The arroyo flows naturally until it reaches AMAFCA's confined concrete channel west of Ventura street and north of Alameda Blvd. According to the North Albuquerque Acres Drainage Master Plan (October 1998), the arroyo corridor between Signal Avenue and Alameda Blvd flows at 3090 cfs in the 100-yr storm event. FEMA Flood Insurance Rate Map (FIRM) shows Zone AH east of Ventura and Zone AE west of it. Signal Village development is located west of Ventura Street and is affected by the FEMA floodplain. This property currently slopes at approximately 3% from east to west and free discharges northwest, to the La Cueva Arroyo.

Methodology and Hydraulic Analysis: HEC-RAS version 5.0.3 was used to analyze and model the 1D floodplain using a steady state run. Manning's coefficients were referenced per HEC-RAS user manual – table 8-1 *"Roughness Variation for Alluvial Streams"*. At a well-defined cross section, it was assumed n=0.025 where the main channel or thalweg morphology acts as plane bed, and n=0.03 to 0.04 where the banks and floodplain contain dense vegetation such as brush and bushes (see Exhibit A for pictures at given cross sections). At poorly defined sections where n values horizontally varied, the values were input manually at each station to accommodate the change in n. Boundary conditions were set for critical depth downstream and known water surface elevation upstream, taken from the previous study completed in March 2012 by Weston that mapped the recent FEMA floodplain.

Proposed Condition: It is proposed to build a Scour Wall at the east and north perimeter of the property. The purpose of the Scour Wall is to contain the incoming arroyo from the east, thus removing the floodplain and protecting the future development. The proposed length of the scour wall is 420 feet starting at the south east corner of the property, continuing north and west following along the left bank of the arroyo. As shown in the HEC-RAS model, the proposed cross sections are in compliance with the proposed grading plan and the water surface elevation at these sections (along the wall) demonstrates that the flow will be contained within the main channel (see existing and proposed tables, cross sections 11+62 to 11+70 for elevation differences). The model run indicates that the scour wall reduces the floodplain on the property as shown in the attached Exhibit A. The proposed floodplain is mostly within the current floodplain boundary, except for those areas where the existing condition model also deviates. The existing condition model is a better baseline for comparison than the mapped FEMA floodplain because this analysis was performed with recent design level survey as opposed to the older lidar contours used in Weston's analysis.

If you should have any questions about this letter report, please call me at 271-2199.

Sincerely,

David B. Thompson, P.E.

Enclosures

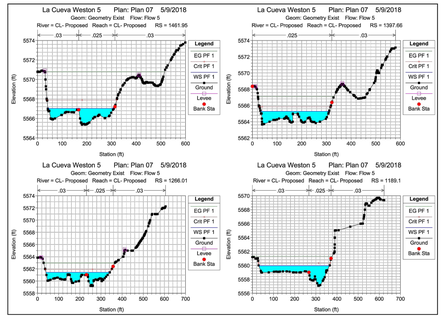
HEC-RAS SIMULATION RESULTS

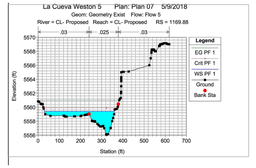
EXISTING CONDITION SUMMARY TABLE

HEC-RAS Plan: Plan 07 River: CL- Proposed Reach: CL- Proposed Profile: PF 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
CL- Proposed	1898.09	PF 1	3090.00	5577.99	5580.65	5580.65	5581.38	0.007715	7.39	479.51	374.14	1.00
CL- Proposed	1809.98	PF 1	3090.00	5575.28	5577.35	5578.17	5579.96	0.032091	13.68	254.20	215.25	2.00
CL- Proposed	1674.96	PF 1	3090.00	5571.00	5573.57	5574.26	5576.02	0.026031	13.80	287.68	280.66	1.85
CL- Proposed	1587.58	PF 1	3090.00	5568.68	5570.87	5571.66	5573.49	0.032034	13.16	250.69	239.02	1.98
CL- Proposed	1516.47	PF 1	3090.00	5567.37	5569.65	5570.45	5572.21	0.011340	12.83	240.83	179.45	1.95
CL- Proposed	1461.95	PF 1	3090.00	5565.36	5567.02	5567.88	5570.78	0.080994	16.87	213.69	268.21	2.98
CL- Proposed	1397.66	PF 1	3090.00	5563.66	5565.28	5565.84	5567.10	0.031934	10.80	286.16	277.83	1.88
CL- Proposed	1266.01	PF 1	3090.00	5559.18	5561.43	5561.91	5562.95	0.029779	11.23	320.54	301.91	1.85
CL- Proposed	1189.1	PF 1	3090.00	5557.07	5559.94	5560.32	5561.31	0.015431	11.02	381.39	334.41	1.44
CL- Proposed	1169.88	PF 1	3090.00	5556.05	5559.40	5559.89	5561.00	0.014511	11.02	359.35	330.45	1.40
CL- Proposed	1089.9	PF 1	3090.00	5552.94	5556.04	5557.05	5559.33	0.025238	14.60	213.15	109.92	1.75
CL- Proposed	1047.92	PF 1	3090.00	5551.93	5554.52	5555.56	5557.98	0.040798	14.92	207.16	117.73	1.98
CL- Proposed	999.95	PF 1	3090.00	5550.58	5553.20	5554.20	5556.25	0.028170	14.00	220.64	103.33	1.69
CL- Proposed	873.91	PF 1	3090.00	5546.55	5549.76	5550.84	5552.90	0.025066	16.08	235.07	127.80	1.67
CL- Proposed	788.25	PF 1	3090.00	5543.91	5547.07	5548.24	5550.70	0.024909	16.34	212.17	93.49	1.69
CL- Proposed	683.29	PF 1	3090.00	5540.94	5544.22	5545.12	5547.94	0.027672	15.48	200.85	96.62	1.83
CL- Proposed	616.82	PF 1	3090.00	5538.98	5542.77	5543.44	5546.02	0.025826	14.73	231.73	180.18	1.69
CL- Proposed	561.38	PF 1	3090.00	5537.00	5540.38	5541.59	5544.19	0.040485	15.90	206.53	148.17	2.06
CL- Proposed	490.06	PF 1	3090.00	5535.37	5538.95	5539.90	5541.67	0.024100	13.27	238.67	157.13	1.60
CL- Proposed	457.16	PF 1	3090.00	5534.94	5538.06	5539.03	5540.87	0.023726	13.73	253.39	237.29	1.78
CL- Proposed	392.85	PF 1	3090.00	5531.00	5535.71	5536.22	5538.75	0.047133	14.48	242.86	302.18	2.33
CL- Proposed	374.73	PF 1	3090.00	5530.98	5535.13	5535.85	5537.93	0.036938	14.53	274.87	387.66	2.13
CL- Proposed	346.75	PF 1	3090.00	5530.95	5534.44	5535.15	5536.92	0.028874	14.26	304.10	364.22	1.94
CL- Proposed	299.48	PF 1	3090.00	5528.97	5532.82	5533.61	5535.54	0.028645	15.15	291.57	329.29	1.95
CL- Proposed	249.63	PF 1	3090.00	5528.04	5531.67	5532.32	5534.19	0.023254	14.64	322.35	387.62	1.79
CL- Proposed	189.79	PF 1	3090.00	5526.53	5529.98	5530.75	5532.78	0.023053	14.86	288.53	300.26	1.80
CL- Proposed	151.07	PF 1	3090.00	5525.00	5528.72	5529.71	5531.67	0.035347	13.79	224.01	162.77	2.07
CL- Proposed	115.47	PF 1	3090.00	5524.97	5528.15	5528.94	5530.64	0.018636	13.70	276.94	192.82	1.63
CL- Proposed	41.45	PF 1	3090.00	5521.88	5525.06	5526.17	5528.86	0.027068	16.47	216.80	139.65	1.96

EXISTING XS





PROPOSED CONDITION SUMMARY TABLE

HEC-RAS Plan: Plan 06 River: CL- Proposed Reach: CL- Proposed Profile: PF 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
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CL- Proposed	1674.96	PF 1	3090.00	5571.00	5573.57	5574.26	5576.02	0.026031	13.80	287.68	280.66	1.85
CL- Proposed	1587.58	PF 1	3090.00	5568.68	5570.87	5571.66	5573.49	0.032034	13.16	250.69	239.02	1.98
CL- Proposed	1516.47	PF 1	3090.00	5567.37	5569.65	5570.45	5572.21	0.011340	12.83	240.83	179.45	1.95
CL- Proposed	1461.95	PF 1	3090.00	5565.37	5567.77	5568.82	5571.15	0.031601	14.79	210.49	131.82	2.03
CL- Proposed	1397.66	PF 1	3090.00	5563.84	5566.62	5567.58	5569.54	0.017349	13.37	226.99	108.15	1.58
CL- Proposed	1266.01	PF 1	3090.00	5559.18	5562.58	5563.80	5566.45	0.031123	15.79	195.66	104.38	2.03
CL- Proposed	1189.1	PF 1	3090.00	5557.07	5560.08	5561.29	5564.09	0.030174	16.05	192.85	99.83	2.03
CL- Proposed	1169.88	PF 1	3090.00	5556.05	5559.27	5560.54	5563.48	0.030119	16.47	187.89	93.21	2.04
CL- Proposed	1089.9	PF 1	3090.00	5552.94	5555.69	5557.05	5560.49	0.045734	17.62	176.14	104.50	2.30
CL- Proposed	1047.92	PF 1	3090.00	5551.93	5554.44	5555.56	5558.24	0.047301	15.63	197.72	116.70	2.12
CL- Proposed	999.95	PF 1	3090.00	5550.58	5553.18	5554.20	5556.28	0.028901	14.12	218.78	102.97	1.71
CL- Proposed	873.91	PF 1	3090.00	5546.55	5549.76	5550.84	5552.90	0.025048	16.08	235.14	127.82	1.67
CL- Proposed	788.25	PF 1	3090.00	5543.91	5547.07	5548.24	5550.70	0.024925	16.34	212.13	93.48	1.69
CL- Proposed	683.29	PF 1	3090.00	5540.94	5544.22	5545.12	5547.94	0.027690	15.48	200.80	96.61	1.83
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CL- Proposed	457.16	PF 1	3090.00	5534.94	5538.06	5539.03	5540.87	0.023726	13.73	253.39	237.29	1.78
CL- Proposed	392.85	PF 1	3090.00	5531.00	5535.71	5536.22	5538.75	0.047133	14.48	242.86	302.18	2.33
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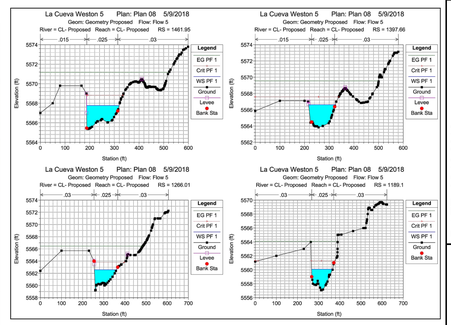
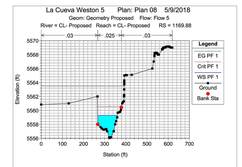
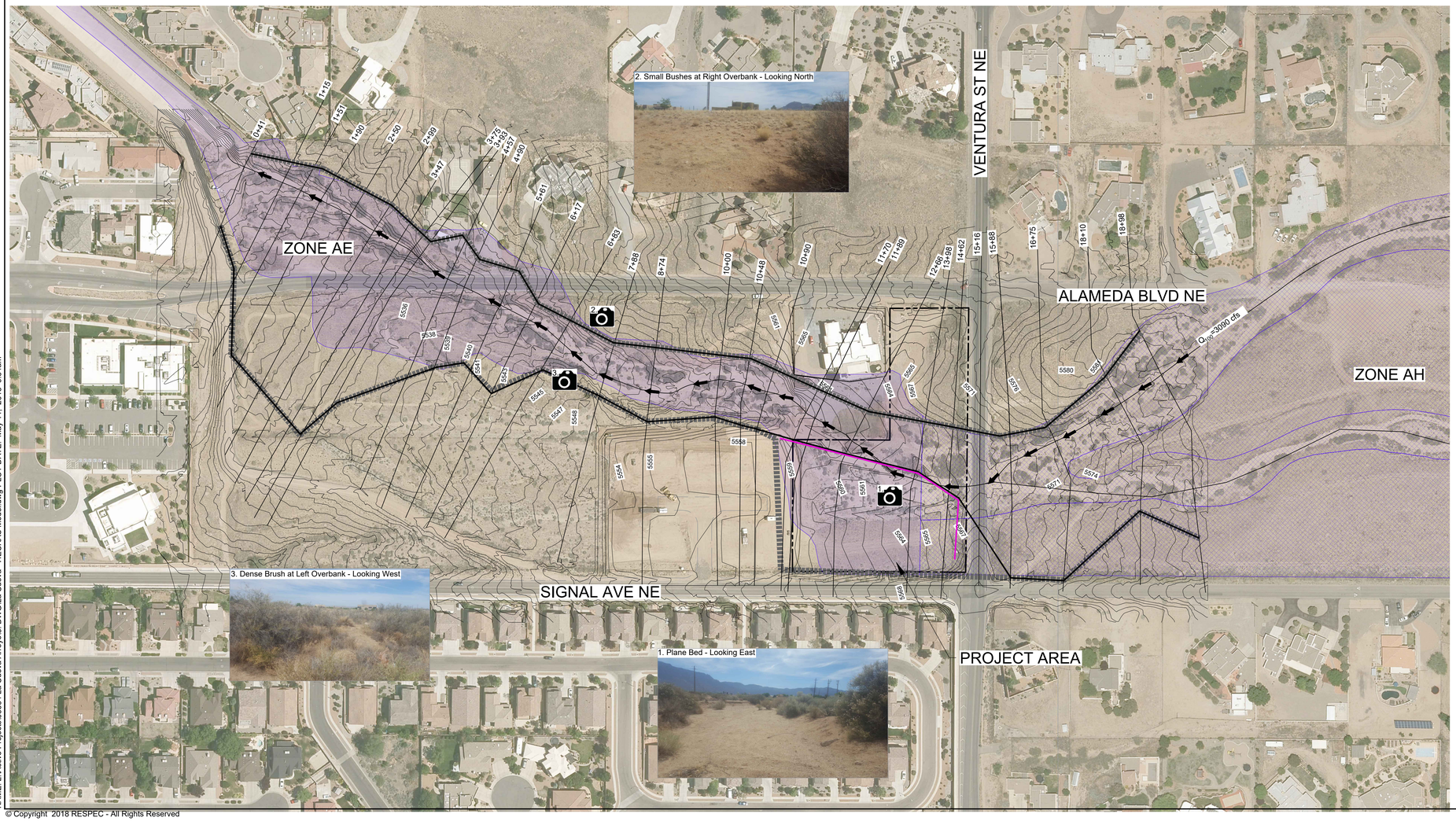
CL- Proposed	189.79	PF 1	3090.00	5526.53	5529.98	5530.75	5532.78	0.023053	14.86	288.53	300.26	1.80
CL- Proposed	151.07	PF 1	3090.00	5525.00	5528.72	5529.71	5531.67	0.035347	13.79	224.01	162.77	2.07
CL- Proposed	115.47	PF 1	3090.00	5524.97	5528.15	5528.94	5530.64	0.018636	13.70	276.94	192.82	1.63
CL- Proposed	41.45	PF 1	3090.00	5521.88	5525.06	5526.17	5528.86	0.027068	16.47	216.80	139.65	1.96

PROPOSED XS







Thompson Engineering Consultants, Inc.

STAMP

DATE: 05.10.2018

LA CUEVA ARROYO FLOODPLAIN ANALYSIS

EXHIBIT A

SHEET NUMBER:

1 OF 1

NAME: L:\Active Projects\03384 La Cueva Arroyo\3. DWG\La Cueva - HECRAS Model.dwg PLOT DATE: May 11, 2018 9:34am